Appendix E
Soil Aquifer Treatment Studies

Soil Aquifer Treatment (SAT) studies were conducted at two sites in the Salt River floodplain near Phoenix, Arizona, to assess the effectiveness of SAT to renovate treated wastewater. The study sites were referenced as the Flushing Meadows Project and 23rd Avenue Project, and involved recharging secondary treated effluent (activated sludge) into surface spreading basins. The depth to groundwater beneath the sites was approximately 60 feet (Bouwer, 1993), which compares to the anticipated depth to groundwater of 90 to 100 feet at the discharge outfall point in Greenbush Draw. Based on effluent water quality data and sampling results from on-site monitor wells, nitrogen concentrations decreased from 27.4 milligrams per liter (mg/l) to 9.6 mg/l at the Flushing Meadows Site, and from 18 mg/l to 5.6 mg/l at the 23rd Avenue Site due to SAT in the vadose zone (Bouwer, 1991). Fecal coliform concentrations averaged 3,500 cfu/100ml in the treated effluent at the 23rd Avenue Site, and ranged from 0 to 3 cfu/100ml after SAT with an average of 0.3 cfu/100ml. Bouwer (1985) noted that the fecal coliform removal due to SAT primarily occurred in the upper three feet of the vadose zone, and a 5 log cycle reduction of fecal coliform was observed at the Flushing Meadows Site within this portion of the vadose zone. In addition, viruses were reported at 21 plague forming units per liter (pfu/l) in the treated effluent, and were not detected in the monitor wells after SAT (Bouwer, 1993).